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EP 65-283

SUBJECT: Inspection Report No. 9 - AS-12 [REDACTED] Development Program with [REDACTED]

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5. Persons Attending:

Agency

Non-Agency

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[REDACTED]

[REDACTED]

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6. Contractor's Performance:

- a. On schedule and expected to remain so: No
- b. Within obligated funds and expected to remain so: Yes
- c. Satisfactory technical progress: Yes

7. Project Status:

a. General

Technical progress is good with a few problem areas. [REDACTED] is estimating March 1966 delivery. A proposal has been received from [REDACTED] for a new task for \$17,178.00 to cover detailed planning of the field test experiment and logistics. [REDACTED] requested through us a letter from the Office of Logistics with a check for the residual inventory of Task Order 4. All GFE on Task Order 4 has either been returned or transferred to Task Order 6.

b. Security

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[REDACTED] new security officer, was briefed by us now that his clearance has been established. A new [REDACTED] inspector has been assigned [REDACTED]. He reportedly wants to see "everything". We told [REDACTED] to call OL/Security immediately if the inspector demanded access to our contracts. Selective Service is trying

to draft. . .

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to draft [REDACTED] a key person on this program in the digital circuit design area. Normally, [REDACTED] can obtain a deferment based on critical skills by listing the contract number, which cannot be done with our contract. Since the loss of [REDACTED] performance on the AS-12, we agreed to ask OL/S if anything could be done to keep him without embarrassing CIA [REDACTED]

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c. Base Station

The receiver site checkout is complete. Minor changes in the ACI subcontract bit synchronizer resulted in a 1/2 to 1 db improvement in system performance. Only one failure, a diode, has occurred in several months of receiver testing. The transmitter site is completed. Performance tests are being continued on the base station to ensure proper system operation.

d. Field Station

(1) Power Amplifier

The power amplifier is completed. It provides 50 watts out from -30 to +50° C with a 22 volt supply. Overall efficiency is greater than 34 percent at 30 Mc/s. Collector efficiency is greater than 47 percent. The unit has been tested from 6 to 30 Mc/s but will operate from 2 to 32 Mc/s. It is open and short circuit stable with ALC protection.

(2) Antenna Matching Unit (AMU)

The AMU is assembled (finally) and electrical components are mostly installed. It is to be checked out soon.

(3) Coder/Keyer Simulator

The unit was modified to match the CK-34 mechanical interface on the receiver/exciter.

(4) Battery Pack. . .

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(4) Battery Pack

The battery pack is mechanically fabricated. The mechanical interfaces with other field unit components are poorly done and will be improved or done over before final painting of the unit. The battery is a 1 AH GE cell. Surprisingly, using this battery to encode messages with the CK-34 only uses .02 AH of the 1 AH capacity, thus not degrading the "mission" life.

(5) Receiver/Exciter

The majority of the technical problems are being experienced with this unit. About 18 August, all microelectronic circuit designs were let to [REDACTED] for layout. Delivery of the completed units is anticipated in early October. The tuner has been modified by adding a fourth switch deck. The switch deck was previously in the AMU and caused a mechanical alignment problem during assembly. A subcontract with [REDACTED] for fabrication of epoxyed modules of TI flatpacks is not going well. [REDACTED] is apparently not as skilled as they thought they were and modules are being received by [REDACTED] with internal shorts and some wiring errors. The contract is fixed price, so [REDACTED] must complete to get paid. [REDACTED] is watching the contract closely. A more serious problem has arisen in the recognition code used in the system. The 10P1023 code employed works as a confirm code. When inverted for sounding however, it will trigger the confirm indication on an adjacent channel in the receiver/exciter. This happens because of differentiation of the RF waveform by the slope of the bandpass channel filter characteristic and the property of all M-sequences and the 10P1023 sequence in particular that the sequence differentiated is the complement of the original sequence. [REDACTED] is studying the problem and has recommended the use of a length 889 non-M sequence. This can be generated with existing logic with only one wire being changed. This non-M sequence apparently does not fail under differentiation and is presently being thoroughly investigated. Meanwhile, a hold has been placed on

further assembly. . .

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further assembly of the digital portions of the receiver/exciter until the problem is found. (It is interesting that this differentiation phenomenon will account for the occasional adjacent band false confirmation found during the Task 4 field tests. The code employed there was a 5P31 M-sequence. The "fix" was using a 33 bit non-M sequence although [REDACTED] did not know at that time why that fixed it.)

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e. Future Work

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Field tests should begin in April 1966. To prepare for them, [REDACTED] has proposed a \$17,000 effort to generate a detailed field test plan to ensure the collection of an adequate amount of meaningful data to ensure our understanding of the system under operational circumstances.

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